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***Highlights (for review)**

- Non-tradeables have been the bulk generator of employment in developing countries
- Non-tradeables are particularly vulnerable to distortion from extractive institutions
- We identify the impact of extractive institutions on non-tradeable prices
- Institutions and regulations quality are negatively related with non-tradeable prices
- Effects are heterogeneous across institution quality and resources rents distribution

Extractive Institutions in Non-Tradeable Industries

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Abstract

We are interested in the hypothesis that in order to promote export competitiveness and create jobs, it is necessary to address major distortions to prices in the non-tradeable sector. Exports drive growth in developing countries, yet most employment growth is generated in non-tradeable sectors. We contribute to the previous literature by explaining how non-tradeable sectors are particularly vulnerable to distortions arising from extractive and poor quality institutions. We estimate an IV-GMM model on a sample of low-middle income countries, finding evidence of a strong relationship between the growth of non-tradeable prices and the quality of local institutions. Overlooking the distortions in non-tradeable sectors could limit the analysis of constraints to economic growth and transformation in developing countries.

Keywords: non-tradeable; institutional quality; extractive institutions; economic development

JEL classification: D2, D4, H1, L1, L5, L8, O1

Extractive Institutions in Non-Tradeable Industries

1. Introduction

For policy purposes, we are interested in the hypothesis that to promote export competitiveness and create jobs, it is necessary to address major distortions to prices in non-tradeable sectors. Exports drive growth in developing countries, but evidence has shown how non-tradeable rather than manufacturing industries have been the bulk generator of employment in the last decades, accounting for almost 70% of total employment, and might be the motor of inclusive growth (Brooks, 2012).[1] However, these sectors are particularly vulnerable to distortion from "extractive institutions", by which powerful groups generate or extract rents from economic activities and create costs for others, mainly because of the closed domestic nature of these sectors and the relatively inelastic demand for non-tradeable goods (Kahn and Jomo, 2000; Acemoglu, 2010; Acemoglu and Robinson, 2012; Pritchett et al. 2017).

The contribution of this study is to identify the impact of extractive institutions in non-tradeable sectors, specifically looking at the relative prices for non-tradeable goods. We implement a dynamic IV-GMM to examine the relationship between changes in institutions' quality and non-tradeable relative prices. By identifying these distortions we fill a gap in the current policy and academic discussions on institutions, growth and economic transformation. Our work contributes to the literature on "development without industrialization" analysing growth in developing countries whose production is skewed to services, suggesting a strong relationship between tradeable competitiveness and non-tradeable costs (Gollin et al. 2016; Glaeser and Henderson, 2017; Lall et al. 2017; Venables, 2017). Extractive institutions are likely to distort prices of non-tradeables disproportionately, with potential negative externalities for tradeable sectors.

In addition, we contribute to the literature on institutions, market distortions and economic growth (Rodrik, 2004; Haltiwanger et al. 2013). Indeed, most of the previous empirical evidence has focused

[1] Non-tradable goods are products and services not traded internationally. These include products whose producers and consumers are mainly located in the same local market, and whose trading costs prevent their export. Generally, if the price of the good is mainly set by local supply and demand, the item should be considered non-tradable (Jenkins et al, 2011). In this study we consider non-tradeable the electricity, gas, water supply industry, housing and households' services sectors. These sectors are particularly closed to imports and foreign investment, especially in low-middle income countries where imports to such industries account for less than 10% of sectoral GDP (UN COMTRADE, 2017).

on the role played by institutions in shaping economic development and growth, rather than focusing on the possible distortive effect on prices (Acemoglu et al. 2001; Rodrik et al. 2004).

2. Data and Methodology

We employ time series on prices in tradeable and non-tradeable sectors using consumer price indexes (CPIs) provided by the ILO for a sample of 88 developing countries between 2002 and 2014.[2] We calculate the relative price for non-tradeables as the change in the non-tradeable CPI relative to the change in the general CPI. To measure institutional quality we rely on two databases provided by the World Bank and largely used in the previous literature, the "World Governance Indicators" and the "Doing Business" databases (William and Siddique, 2008; Alvarez et al. 2018).[3] We use principal component analysis to create two indicators of institutions quality, one for each database, which statistically summarize the underlying data and weight each indicator according to its additional variability (Langbein and Knack, 2010).

To estimate how an improvement in institutions and business regulations quality affects the growth of relative prices in non-tradeable sectors, we employ a dynamic two-step difference IV-GMM (Arellano and Bond, 1991), controlling for the instruments potential weakness and benchmarking it with an OLS model:

$$\Delta CPI\_NT_{ct} = \beta_0 + \beta_1 \Delta WGI_{ct} + \beta_2 \Delta EDB_{ct} + \beta_3 \Delta U_{ct} + \beta_4 \Delta IMP_{ct} + \beta_5 \Delta GDP_{ct} + \beta_6 \Delta POP_{ct} + \beta_7 \Delta NATRES_{ct} + j_c + j_t + \varepsilon_{ct}$$

ΔCPI_NT_{ct} is the change in the relative price of non-tradeables at time *t* in country *c*, ΔWGI_{ct} the growth in the World Governance Index while ΔEDB_{ct} the growth in the Ease of Doing Business Index. We control for unemployment ΔU_{ct}, imports of services ΔIMP_{ct}, GDP per capita ΔGDP_{ct}, population growth ΔPOP_{ct} , share of natural resources rents over GDP $\Delta NATRES_{ct}$ and we include

[2] The World Bank categorised in 2002 low (LIC) and low-middle income (LMIC) countries with an income per-capita below 2,395 USD, 4,035 USD in 2014. Alternative sources of price data have been considered, however those were either limited to specific countries and industries or cross-sections for single years, thus not allowing a dynamic analysis. As a robustness test, in Table A3 we use the World Bank CPI data from 2002 to 2011 validating the main results.

[3] The WGI database includes six dimensions of governance including accountability, political stability, government effectiveness, regulatory quality, rule of law and corruption control. The EDB includes indicators on the easiness of starting a new business, getting construction permits, registering property rights, getting credit, pay taxes, trading across borders, enforcing contracts and resolve insolvencies.

country j_c and year fixed-effects j_t.[4] As instruments we use infants' mortality rate, which has been found to be linked with democracy, political and institutional conditions, but not with prices (Zweifel and Navia, 2000; Acemoglu et al. 2001; Rodrik et al., 2004; Shandra et al. 2004), as well as the potentially endogenous independent variables WGI_{ct} and EDB_{ct} lagged up to *t-4*. In addition we lag by one period all other control variables.

3. Results

In Table 1 we compare the results of the OLS and GMM estimations. Column 2 shows a negative relation between institutions quality and non-tradeable prices in LMICs, where a one standard deviation increase (0.29) in the WGI index is associated with a reduction by almost 1.8% in the relative price of non-tradeables, while one standard deviation increase in the EDB index (0.24) is related with a 3.64% reduction in the relative price of non-tradeables. These effects are relevant especially in LMICs where poorer business regulations might generate rents and the creation of monopolies. These results corroborate and generalize the country and sector-specific findings of the previous literature on rent generation in non-tradeable sectors, in particular regarding the relevance of business regulations and competition policies in promoting the provision of efficient non-tradeables, preventing the creation of oligopolies and the generation of rents (Love and Martinez-Peria, 2015; Rijkers et al. 2017).

Figure 1 shows the heterogeneous effect of improvements in the WGI index across the distribution of the EDB and vice versa, suggesting in panel B that improvements in business regulations are particularly beneficial for countries with poorer governance institutions, while in panel A that governance enhancements reduce non-tradeable inflation in countries with already relatively stronger business regulations. Moreover, the negative relationship between WGI/EDB indexes and non-tradeable prices is particularly strong for countries with low resources rents intensities in panels C-D. Countries heavily dependent on natural resources rents show a positive relationship between institutions quality and non-tradeable prices, probably because of a "Dutch disease" effect where

[4] Summary statistics reported in Table A2 in the appendix.

commodity exporting countries experience non-tradeable inflation despite improvement in their governance (Nkurunziza et al. 2017).[5]

Table 1: Impact of institutions quality on the relative prices of non-tradeable goods.

	(1)	*(2)*	*(3)*	*(4)*
	IV-GMM		***OLS***	
	General	*LMIC*	*General*	*LMIC*
WGI	0.0209	-0.0630***	-0.102	-0.111**
	(0.0516)	(0.0244)	(0.168)	(0.065)
EDB	-0.147***	-0.187***	0.172	-0.192**
	(0.0130)	(0.0365)	(0.110)	(0.098)
U	0.0788***	0.540***	-0.0515	-0.0157
	(0.0120)	(0.0330)	(0.0337)	(0.0650)
IMP	-0.0316***	-0.0310***	-0.0148	-0.0178***
	(0.00666)	(0.0058)	(0.0193)	(0.0002)
GDP	0.110***	0.0288	0.0398***	0.0272
	(0.0251)	(0.0552)	(0.0107)	(0.0818)
POP	0.639***	-0.388**	0.152	0.190
	(0.0284)	(0.187)	(0.116)	(0.249)
NATRES	-0.00386	-0.0292*	-0.0249	-0.0204*
	(0.0103)	(0.0150)	(0.0245)	(0.0107)
Observations	1,178	525	1,178	525
No. Countries	149	88	149	88
AR(2)	0.276	0.999	-	-
Hansen	0.158	0.998	-	-

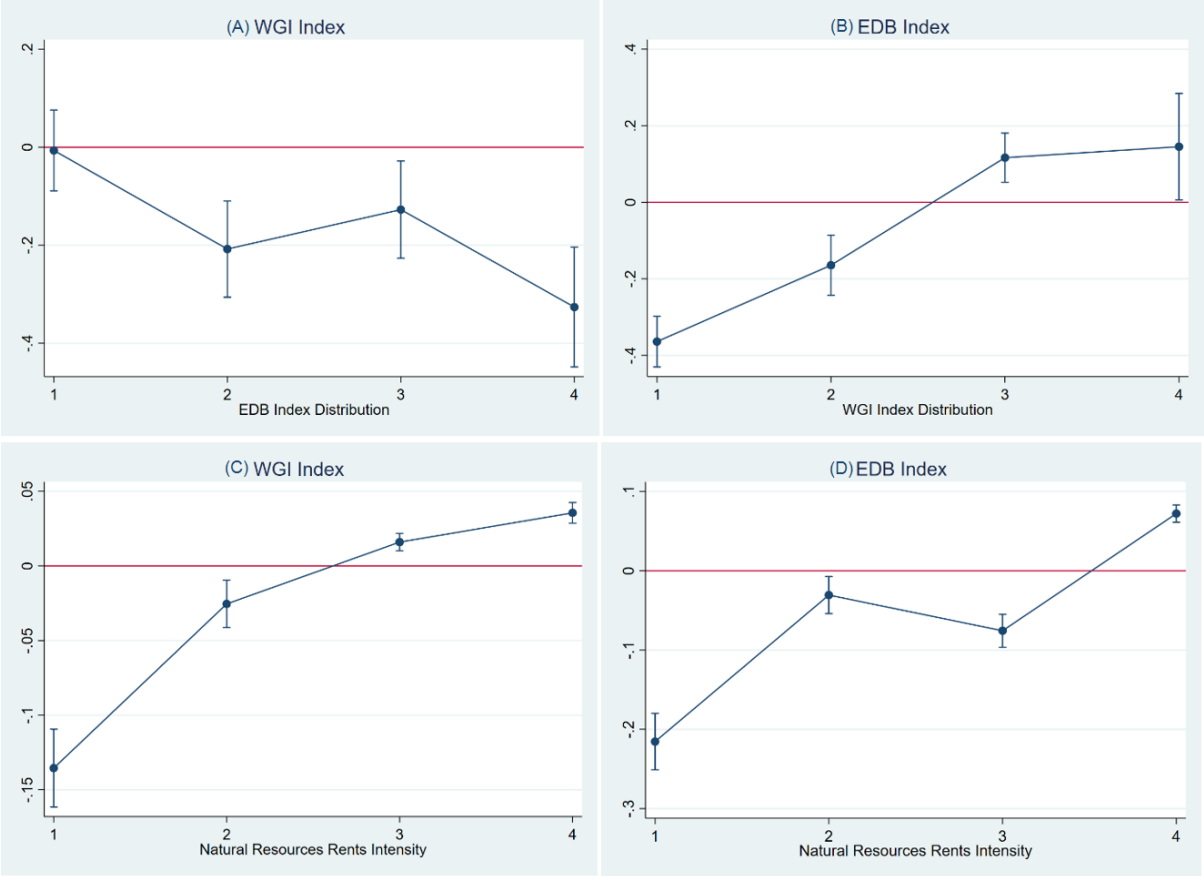
Notes: Estimation based on ILO and WB data for the period 2002-2014. Estimators used are a first-difference panel OLS and IV-GMM with country and year fixed-effects. Instrumental variables used in the two-step difference GMM include infants' mortality rate, and the lags of the WGI and EDB indexes up to t-4. Robust standard errors clustered at the country-level reported in parentheses. Statistical significance levels: *** p<0.01, **<0.05, * p<0.1.

4. Conclusions

Non-tradeable sectors are particularly relevant for economic development and inclusiveness given the evidence that, even when growth is led by manufacturing exports, most jobs come from these industries. Our analysis shows how non-tradeable sectors are particularly vulnerable to distortions arising from extractive institutions. Countries interested in inclusive growth should take interest in the impact of institutions and pro-competitive business regulations on the performance of non-tradeable sectors, since these have direct employment implications and potential positive externalities both for domestic market and export-oriented tradeable industries.

[5] Additional robustness tests reported in Tables A4-A8 in the appendix.

Figure 1: Impact of WGI, EDB and resources rents interactions on the prices of non-tradeables.



Notes: Estimation based on ILO and WB data for the period 2002-2014 using an IV-GMM with country and year fixed-effects. Distribution of the WGI, EDB and natural resources rents intensity reported in quartiles from the bottom (1) to the top (4) quartiles.

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Supplementary Materials

Enrico Vanino* and Stevan Lee†

The supplementary materials include additional description of the data and further robustness tests of our main results. Table A.1 lists the countries included in our study and their income classification in 2002 and 2014 according to the World Bank, while Table A.2 presents a few descriptive statistics for the main variables included in the econometric analysis. Table A.3 tests the results presented in Table 1 of the paper using the World Bank CPI data for the period 2002-2011 instead of the ILO CPI data. Tables A.4 and A.5 control for multicollinearity, first by including separately the WGI and EDB variables, and secondly by including individually all the different components of the WGI and EDB indexes to show which are the most important factors related to the reductions in the relative non-tradeable prices. Table A.6 reports the results of the GMM estimations including up to 9 lags of the WGI and EDB variables, while Table A.7 reports the first-stage of the IV-GMM estimation. Finally, Table A.8 reports the comparison of the results in Table 1 benchmarked by both an OLS and an IV-OLS model.

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